Title UV treatment of fresh fruits and vegetables for improved quality: a status report

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Abstract

Purpose of review: Over the past 20 years, ultraviolet (UV) hormesis has been evaluated as a postharvest treatment for fresh fruits and vegetables. Results from several independent research teams highlight the potential of this new technology. The objectives of this review are to present an overview of UV hormesis in postharvest crops and to characterise their responses to this physical stressor. Considerations related to future directions for the application of UV treatment are also discussed.

Findings: UV treatment applied to fresh fruits and vegetables at defined low effective doses, termed hormic or hormetic, results in a beneficial response in treated plant organs. UV-treated horticultural crops show improved resistance to disease development that is primarily related to the induced synthesis and accumulation of phytoalexins, as well as other defence mechanisms. UV treatment also favourably affects the evolution of several quality parameters in treated commodities. For model commodities such as grape, citrus and strawberry, results have been presented on the UV enhancement of bioactive compounds known to be beneficial to human health and well-being.

Directions for future research: UV treatment is likely ready for commercial application. However, any attempt to develop an online apparatus must address crop specificity and the range of factors that affect hormetic responses. Future multidisciplinary research should support the development of effective technological designs applicable to particular postharvest systems.